

CLAIMS

What is claimed is:

1. A collapsible steering column assembly comprising;
a support for attachment to a vehicle,
5 a steering column movably supported by said support, and
an energy absorbing mechanism interconnecting said steering column and
said support for absorbing energy in response to said steering column moving relative
to said support during a collision, and
said energy absorbing mechanism including an elongated element movable
10 along a longitudinal axis in response to the movement of said steering column and a
brake for variably resisting the movement of said elongated element.
2. An assembly as set forth in claim 1 wherein said brake is operable to provide
a minimum resistance.
3. An assembly as set forth in claim 2 wherein said brake is operable to prevent
15 movement of said elongated element until 300 lbs of force is applied to said elongated
element.
4. An assembly as set forth in claim 1 further comprising at least one frictional
member in frictional engagement with said elongated element for frictionally resisting
the movement of said elongated element and for adding to the resistance to movement
20 of said elongated element by said brake.
5. An assembly as set forth in claim 4 wherein said elongated element is
sufficiently flexible to provide insubstantial resistance to bending for allowing
frictional engagement with said frictional member.

6. An assembly as set forth in claim 4 wherein said brake in combination with said frictional member is operable to prevent movement of said elongated element until 300 lbs of force is applied to said elongated element.
7. An assembly as set forth in claim 1 further comprising a computer system.
- 5 8. An assembly as set forth in claim 7 wherein said computer system comprises a sensor for sensing the collision and generating signals based on a magnitude of force on said steering column during the collision.
9. An assembly as set forth in claim 8 wherein said computer system further comprises a processor for receiving the signals from said sensor and controlling the
- 10 variable resistance of said brake based on the signals.
10. An assembly as set forth in claim 1 wherein said energy absorbing mechanism further comprises a roller rotatable about an axis A.
11. An assembly as set forth in claim 10 wherein said elongated element has a first end wound about said roller for unwinding and rotating said roller in response to
- 15 the movement of said steering column relative to said support.
12. An assembly as set forth in claim 11 wherein said brake resists rotational movement of said roller in response to the movement of said steering column relative to said support.
13. An assembly as set forth in claim 12 further comprising at least one
- 20 frictional member in frictional engagement with said elongated element for frictionally resisting the movement of said elongated element and for adding to the resistance to movement of said elongated element from said brake.

14. An assembly as set forth in claim 13 wherein said elongated element is sufficiently flexible to provide insubstantial resistance to bending for allowing frictional engagement with said frictional member.

15. An assembly as set forth in claim 13 wherein said brake in combination with
5 said frictional member is operable to prevent movement of said elongated element until 300 lbs of force is applied to said elongated element.

16. An assembly as set forth in claim 15 further comprising a computer system connected to said brake for controlling the resistance provided by said brake.

17. An assembly as set forth in claim 16 wherein said computer system
10 comprises a sensor for sensing the collision and generating signals based on a magnitude of force on said steering column during the collision.

18. An assembly as set forth in claim 17 wherein said computer system further comprises a processor for receiving the signals from said sensor and controlling the variable resistance of said brake based on the signals.

15 19. An assembly as set forth in claim 10 wherein said roller is rotatably supported by said steering column.

20. An assembly as set forth in claim 19 wherein said elongated element has a second end fixed to said support.

21. An assembly as set forth in claim 10 wherein said roller is rotatably
20 supported by said support.

22. An assembly as set forth in claim 21 wherein said elongated element has a second end fixed to said steering column.